

# Year 2008 Progress Report of Activities

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## Elsberry, Missouri Plant Materials Center

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## Who We Are

The Elsberry Plant Materials Center (PMC) is a program within the Natural Resources Conservation Service (NRCS), a branch of the United States Department of Agriculture. The Elsberry PMC is one of 27 plant materials centers located throughout the United States. Areas serviced by the Elsberry PMC include Missouri, Iowa, and Illinois. The Center is located approximately 60 miles north and west of St. Louis, Missouri on Highway 79.

## Program Emphasis

It is our mission to develop and transfer effective state-of-the-art plant sciences technology to meet customer and resource needs. NRCS Plant Materials activities are consistent with the objectives of the U.S. Department of Agriculture and NRCS Strategic Plans, namely to provide timely and effective vegetative solutions for resource

needs. Superior adapted plants are developed, tested, and released to commercial growers with production and management technology. Emphasis is on using native plants.

## Four Major Objectives Addressed:

1. **Reduce Excessive Soil Erosion and Improve Water Quality through Biodiversity of Plant Species for Wildlife, Wetlands, and Restoration**
2. **Increase Forage Quality and Quantity through Low Input Sustainable Agriculture**
3. **Improve Water Quality by Controlling Run-Off, Utilizing Nutrients, and Stabilizing Shorelines**
4. **Meet Additional Conservation Needs of Missouri, Iowa, and Illinois including plants for Biofuels and Urban Landscaping**

## New Plant Release for 2008

The PMC is excited to announce the source-identified release of Northern Missouri Germplasm Sideoats Grama (*Bouteloua curtipendula*, Michx.). Sideoats grama is a native perennial warm-season bunch grass. Collections were taken from native prairie remnants within the northern glaciated plains in the counties north of the Missouri River within the state of Missouri. Thirteen collections from six different counties were combined, propagated in plugs and planted at the Elsberry Plant Materials Center. The six counties in Missouri that comprise this

germplasm are Lincoln, Atchison, Boone, Holt, and Montgomery.



**Northern Missouri Germplasm Sideoats Grama (*Bouteloua curtipendula*, Michx.)**

There is a significant amount of interest in short growing native warm-season grasses and sideoats grama is a grass that has a lot of potential. It can be used for roadside and wildlife plantings, prairie restorations, field borders, buffers, landscaping, and for increasing plant diversity in prairie communities.

### **Inter Center Strain Trial (ICST) of Big Bluestem - Yield and Persistence of 11 Big Bluestem Sources in Kansas, Missouri, Arkansas and Mississippi**

There have been several prevarietal releases of big bluestem made in recent years by Booneville, AR and Elsberry, MO PMCs. Comparative evaluations of these prevarietal releases and a selection from the Manhattan, KS PMC are needed to further document their performance and adaptation in other geographical regions. Information gained from these plantings may be used to provide data to support elevating lower class releases (e.g. source id and selected class) to a higher release category (e.g. tested class or cultivar).

In addition to these releases, standard big bluestem cultivars commonly used in NRCS

conservation plantings and programs will be included in the trial along with other cultivars developed by the USDA-ARS, Lincoln, NE.

### **Selection of High Biomass Yielding, Iowa Source Indiangrass for Biofuel Use**

In late winter 2008, plants were selected from Northern, Central, and Southern Iowa Ecotype seed production fields. Plants that possessed high biomass production and also stiff stems that resist lodging were selected. Selected plants were isolated in a crossing block. Equal amounts of seed were harvested from each plant in the crossing block and placed in the germinator. Plants that have seeding emergence of 5-7 days will be selected. Plants with quick emergence will be isolated in an evaluation block and again evaluated for high biomass production and resistance to lodging. Selected plants will be allowed to cross and this will become the breeders block. A seed production field will be established from the breeders seed. Advanced field testing and commercial seed production will follow. Evaluation plantings will be established in selected areas in the state of Iowa.



**Selection of Iowa Biofuel Indiangrass from an Iowa Ecotype Production Plot**



## 2008 –The Year of the Flood

Flooding at the PMC has become more common than we would like. The last big flood was in 1993, just 20 years from the previous one in 1973. We hope the frequency does not increase.

We did have about a week notice that it was almost for sure going to top the levees. This gave us some time to move plants that we were certain would not persist. Volunteers from local field offices came to help in our efforts to move plant materials.



### PMC Crew with NRCS & MDC Help

There can usually be something to learn from a bad situation. We know switchgrass is a flood tolerant species. We made selections of plants that were very tolerant after the 1993 flood that killed the variety “Cave-in-Rock” after eight weeks of flooding. The 2008 flood lasted about four weeks and “Cave-in-Rock” survived.



The levee was topping as we worked to move plants to higher ground



**“Cave-in-Rock” switchgrass prior to the flood. Planted 4/15/07**



**“Cave-in-Rock” switchgrass during the flood**



**“Cave-in-Rock” switchgrass flooded for four weeks under five to six feet of water**



**“Cave-in-Rock” switchgrass  
as water is receded off the field**



**“Cave-in-Rock” switchgrass, a couple of  
months after the flood, nearing seed harvest**

The flooded seed production field of “Cave-in-Rock” switchgrass was planted April 15<sup>th</sup>, 2007 and was totally inundated by the 22nd of June, 2008. Floodwaters were mostly off after about a month. Seed was harvested September, 2008 and 433 bulk pounds of seed was taken off 1.5 acres.

## Weather Records

The PMC has been taking weather data since it opened in 1934 and is one of the oldest National Weather Service data collection sites in the United States. The following tables show extremes and how 2008 compared to the long-term average for precipitation. 2008 was the 2nd wettest year on record.

The lowest temperature in 2008 was 0°F on January 20th. The highest temperature in 2008 was 97°F which occurred on August 4th.

### Significant Wet Periods in 2008

Time Period	Total Precip.	Average
April 19– June14	10.14 inches	7.31 inches
July 3 – July 31	10.39 inches	3.18 inches
Sept 3 - Sept 15	10.61 inches	1.41 inches

### 2008 Weather Data Elsberry PMC Precipitation (Inches)

Month	2008	77 Yr Ave	Depart
January	1.55	1.96	-0.41
February	4.45	1.95	2.47
March	4.78	3.17	1.61
April	4.99	3.62	1.37
May	6.04	4.11	1.93
June	3.69	3.76	-0.07
July	10.39	3.40	6.99
August	1.66	3.36	-1.70
September	11.63	3.25	8.38
October	0.64	3.01	-2.37
November	1.20	2.92	-1.72
December	<u>3.97</u>	<u>2.47</u>	<u>1.50</u>
TOTAL	54.99	36.98	18.01

To learn more about these and other Elsberry PMC activities visit our website:

<http://www.Plant-Materials.nrcs.usda.gov>

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